

In the Claims

Kindly cancel claims 70-122, 129-146, 148 and 149 without prejudice or disclaimer.

In accordance with 37 CFR §1.121, please substitute for claims 25-37, 123 and 124 the following rewritten version of the same claims, as amended. The changes are shown explicitly in the attached "Version with Markings to Show Changes Made."

25. (Amended) An amylase which acts on a substrate saccharide, the substrate saccharide being composed of at least three sugar units wherein at least three sugar units from the reducing end are glucose residues, so as to liberate principally monosaccharides and/or disaccharides by hydrolyzing the substrate saccharide from the reducing end side, and shows a trehaloseoligosaccharide-hydrolyzing activity of more than 10.6 units/mg wherein 1 unit equals the activity of liberating 1 μ mol of α,α -trehalose per hour from maltotriosyltrehalose.

26. (Amended) The amylase claimed in Claim 25 which has a principal activity of acting on a substrate saccharide, the substrate saccharide being composed of at least three sugar units wherein at least three sugar units from the reducing end side are glucose residues and the linkage between the first and the second glucose residues from the reducing end side is α -1, α -1 while the linkage between the second and the third glucose residues from the reducing end side is α -1,4, so as to liberate α,α -trehalose by hydrolyzing the α -1,4 linkage between the second and the third glucose residues.

27. (Amended) The amylase claimed in Claim 25, wherein said amylase also has an activity of endotype-hydrolyzing one or more α -1,4 linkages within the molecular chain of a substrate.

28. (Amended) The amylase claimed in Claim 25, wherein said amylase has an activity of hydrolyzing a substrate trehaloseoligosaccharide at the α -1,4 linkage between the second and the third glucose residues from the reducing end side to liberate α,α -trehalose.

29. (Amended) The amylase claimed in Claim 25, wherein its molecular weight measured by SDS-polyacrylamide gel electrophoresis is 61,000 to 64,000, approximately.

30. (Amended) The amylase claimed in Claim 25, wherein the amylase has the following physical and chemical properties:

- (1) Optimum pH with in the range from 4.5 to 5.5;
- (2) Optimum temperature within the range from 60 to 85°C;
- (3) pH Stability within the range from 3.0 to 13.0; and
- (4) Thermostability which allow 100% enzymatic activity to remain even after exposure at 80 to 85°C for 6 hours.

31. (Amended) The amylase claimed in Claim 25, wherein the isoelectric point measured by isoelectric focusing is pH 4.3 to pH 5.4.

32. (Amended) The amylase claimed in Claim 25, wherein its activity can be fully inhibited with 5 mM CuSO₄.

33. (Amended) The amylase claimed in Claim 25, wherein the amylase is derived from an archaeobacterium belonging to the order *Sulfolobales*.

34. (Amended) The amylase claimed in Claim 33, wherein the amylase is derived from an archaeobacterium belonging to the genus *Sulfolobus*.

35. (Amended) The amylase claimed in Claim 34, wherein the archaeobacterium belonging to the genus *Sulfolobus* is the *Sulfolobus solfataricus* strain KM1 (FERM BP-4626).

36. (Amended) The amylase claimed in Claim 34, wherein the archaeobacterium belonging to the genus *Sulfolobus* is the *Sulfolobus solfataricus* strain DSM 5833.

37. (Amended) The amylase claimed in Claim 34, wherein the archaeobacterium belonging to the genus *Sulfolobus* is the *Sulfolobus acidocaldarius* strain ATCC 33909.

123. (Amended) A polypeptide comprising an amino acid sequence of SEQ ID NO: 6.

124. (Amended) A polypeptide comprising an amino acid sequence of SEQ ID NO: 8.

126. (Amended) The polypeptide claimed in any one of Claims 124, 152 or 153, which has an activity of acting on a substrate saccharide, the substrate saccharide being composed of at least three sugar units wherein at least three sugar units from the reducing end side are glucose residues and the linkage between the first and second glucose residues, from the reducing end side is α -1, α -1 while the linkage between the second and third glucose residues from the reducing end side is α -1,4, so as to liberate α , α -trehalose by hydrolyzing the α -1,4 linkage between the second and third glucose residues.


127. (Amended) The polypeptide claimed in any one of Claims 124, 152 or 153, which has the following principal activities:

(1) An activity of endotype-hydrolyzing one or more of α -1,4 glucoside linkages in a sugar chain;

(2) an activity of acting on a substrate saccharide, the substrate saccharide being composed of at least three sugar units wherein at least three sugar units from the reducing end are α -1,4-linked glucose residues, so as to liberate principally monosaccharide and/or disaccharide by hydrolyzing the substrate from the reducing end side; and

(3) an activity of acting on a substrate saccharide, the substrate saccharide being composed of at least three sugar units wherein at least three sugar units from the reducing end side are glucose residues and the linkage between the first and second glucose residues from the reducing end side is α -1, α -1 while the linkage between the second and third glucose

residues from the reducing end side is α -1,4, so as to liberate α , α -trehalose by hydrolyzing the α -1,4 linkage between the second and third glucose residues.

 128. (Amended) The amylase claimed in Claim 25, wherein the optimum temperature for its action is 60 to 85°C.

Please add the following new claims 150-153:

150. (New) An amylase which shows a trehaloseoligosaccharide-hydrolyzing activity of more than 10.6 units/mg, wherein 1 unit equals the activity of liberating 1 μ mol of α , α -trehalose per hour from maltotriosyltrehalose.

151. (New) The amylase claimed in Claim 28, wherein said trehaloseoligosaccharide is glucosyl-trehalose or maltooligosyltrehalose.

152. (New) A polypeptide:

- (a) encoded by a nucleotide comprising a sequence represented by SEQ ID NO: 5;
- (b) encoded by a nucleotide comprising a sequence from 642 to 2315 of SEQ ID NO: 5 or a degenerate variant thereof; or
- (c) encoded by a nucleotide sequence capable of hybridizing to (a) or (b) in a hybridization solution comprising 6XSSPE and 0.5% SDS at 65°C overnight followed by washing with a solution comprising 2XSSPE and 0.1% SDS for 10 minutes twice, wherein said nucleotide has a sequence encoding a polypeptide having amylase enzyme activity.

153. (New) A polypeptide:

- (a) encoded by a nucleotide comprising a sequence represented by SEQ ID NO: 7;
- (b) encoded by a nucleotide comprising a sequence from 1176 to 2843 of SEQ ID NO: 7 or a degenerate variant thereof; or